Claims:

1. A sensitive, fast response thin film ethanol sensor comprising a substrate coated with a thin film of bismuth molybdate and having electrode contacts deposited on said substrate coated with the thin film.

2. A thin film ethanol sensor as claimed in claim 1, wherein the substrate may be selected from the group consisting of alumina, titania, zirconia, glass, quartz glass and silica.

3. A thin film ethanol sensor as claimed in claim 1, wherein the thin film may have the ratio of bismuth to molybdenum as 2:2.

4. A thin film ethanol sensor as claimed in claim 1, wherein the thin film may have the ratio of bismuth to molybdenum as 2:3.

5. A thin film ethanol sensor as claimed in claim 1, wherein the electrode contacts are deposited by vacuum evaporation.

6. A thin film ethanol sensor as claimed in claim 1, wherein the evaporated electrode contacts are gold contacts.

7. A thin film ethanol sensor as claimed in claim 1, wherein the thin film may be characterized by the ability to detect concentrations of at least 10 ppm of ethanol vapour in human breath.

8. A thin film ethanol sensor as claimed in claim 1, wherein the thin film may be characterized by change in resistance in at least 10 seconds due to human breath containing ethanol vapour.

9. A thin film ethanol sensor as claimed in claim 1, wherein the thin film may be characterized by change in resistance due to human breath containing ethanol vapours at a thin film temperature of 250°C.

10. A thin film ethanol sensor as claimed in claim 1, wherein the sensitivity of the thin film ethanol sensor may be in the range of 2.0 to 14.5.

11. A thin film ethanol sensor as claimed in claim 1, wherein the stability of the thin film ethanol sensor may be at least for one year.

12. A process for the preparation of a sensitive, fast response thin film ethanol sensor, said process comprising depositing a thin film, from a precursor solution of bismuth molybdenum hexanoate solution, on a substrate at a temperature in the range of 200 to 400°C, cooling the deposited film, depositing electrode contacts on the said thin film ethanol sensor.

13. A process as claimed in claim 12, wherein the substrate may be selected from the group consisting of alumina, titania, zirconia, glass, quartz glass and silica

14. A process as claimed in claim 12, wherein the ratio of bismuth cation to molybdenum cation in the precursor solution may be 2:2 to 2:3.

15. A process as claimed in claim 12, wherein the thin film of Bismuth molybdate is deposited by known technique.

16. A process as claimed in claim 15, wherein the thin film of Bismuth molybdate is deposited by spray pyrolysis method.

17. A process as claimed in claim 12, wherein the thin film spray deposition technique may be carried out with a chemically inert gas such as pure nitrogen gas.

18. A process as claimed in claim 12, wherein the electrode contacts are deposited by vacuum evaporation.

19. A process as claimed in claim 18, wherein the electrode contacts are evaporated by thermal evaporation.

20. A process for preparing precursor solution of bismuth molybdenum hexanoate said process comprising: dissolving molybdenum trioxide in oxalic acid solution, the said solution being concentrated to give a blue coloured solution, adding 2-ethyl hexanoic acid to said blue coloured solution, heating the resulting mixed solution to a temperature in the range of 100 to 150°C for a period in the range of 30 to 60 minutes

to remove water, said water free solution being maintained at a temperature in the range of 150 to 250°C for a period in the range of 30 min to 90 minutes to obtain a hot brown coloured solution, adding bismuth trioxide slowly to the said brown coloured hot solution under reflux thereby getting bismuth molybdenum hexanoate precursor solution.

21. A process as claimed in claim 20, wherein the purity of 2 ethyl hexanoic acid may be at least reagent grade.

22. A process as claimed in claim 20, wherein the oxalic acid solution is prepared in water.

23. A process as claimed in claim 20, wherein molybdenum trioxide is added in small quantities to oxalic acid solution maintained at a temperature of 80 to 120° C to effect complete dissolution of molybdenum trioxide.

24. A process as claimed in claim 20, wherein the purity of molybdenum trioxide may be at least reagent grade.

25. A process as claimed in claim 20, wherein the purity of bismuth trioxide may be at least regent grade.

26. A process as claimed in claim 20, wherein bismuth hexanoate solution may be mixed to molybdenum hexanoate solution in a ratio such as 2:2 to 2:3.

27. A process as claimed in claim 20, wherein the water used may be such as distilled water, deionised water.

28. A process as claimed in claim 20, wherein the precursor solution may have stability of at least three months.